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ABSTRACT

The first of five chapters in this master's thesis examines the current status of media facilities and historical factors that have contributed to their development. An analysis of the design of media facilities following the principle of "form follows function" begins in the second chapter, which expounds a theoretical model of the media facility as a function of: (1) the service offered by the facility; (2) the ratio between media mediated and instructor mediated learning; and (3) the number of users, staff, and students. Physical implications of this model are discussed in the third chapter, which focuses on questions that need to be asked before any decisions are made regarding the size of the media center, the personnel needed and their qualifications, the selection of equipment appropriate for the services to be offered, and media selection. The fourth chapter addresses the implications of the model for the administration of the media center, including the issues of centralization, budgets, and standards. The concluding chapter discusses current standards; makes some projections about the objectives, personnel, and facilities of media centers in the future; and suggests topics for future research. An 84-item bibliography is provided, and American Library Association specifications for space and equipment are appended. (MES)

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THE DESIGN OF MEDIA FACILITIES

A Thesis

Presented

to the Faculty of

California State University, Chico

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Information and Communication Studies:

Option in Instructional Technology

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by

Saviour Chircop 1985

Spring 1985

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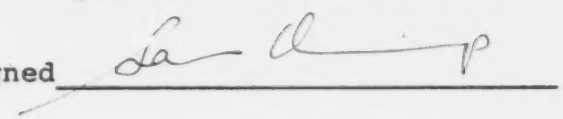
Signed 

To

a Senior Tulip

and all the people

who help me live my visions

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ABSTRACT

THE DESIGN OF MEDIA FACILITIES

by

Saviour Chircop

Master of Arts in

Information and Communication Studies:

Option in Instructional Technology

California State University, Chico

Spring 1985

The educational process involves the passing on of knowledge through generations as a means of survival. Traditional education was largely based on verbal processes. In this century we are presented with an audio-visual culture. The media facilities are meant to be places for disseminating knowledge through the use of technology. Their emergence in instruction became possible due to several breakthroughs in the fields of psychology, technology and educational theory. Other historical factors contributed to the present state of media facilities.

This study tries to analyse the design of media facilities following the principle of "form follows function". A theoretical model is expounded presenting the media facility as a function of three elements: a) the services offered by the facility; b) the ratio between

media mediated learning and instructor mediated learning; and c) the number of users, staff and students.

Chapters three and four continue to unfold the model by discussing its implications. Chapter three deals with questions of size, personnel and their qualifications, services to be offered and media selection. Chapter four discusses administration, the problem of centralization, questions of budgets and standards.

Chapter five concludes the study trying to look at some meaningful questions that facilities have to face in the years ahead. Some projected trends are suggested and areas for further research pointed out.

CHAPTER I

MEDIA FACILITIES: WHERE THEY STAND AND WHY

Introduction

> Every successful media center is unique. To be successful it must function as an integral component of the instructional program of a particular school. Therefore, to present center designers with a set of specifications and say, "If you follow these you'll have a good center" is highly impractical. What is needed is a model for center design which is adaptive, which facilitates analysis of the particular setting for the proposed center, and which generates implications for the design of that center.(McMahan, 1975, p. 18)

The emergence of the media facility within the educational or industrial processes has been the result of several factors converging to a point in history. Each media facility has developed according to certain needs pronunced by the surrounding environment. Thus, there is no one and definite plan for media center development. Each center developed on its own, many times depending on the enthusiastic effort of some person within the facility.

The reading material on the subject is not very abundant. This may be due to the fact that this area of study is relatively new. It only emerged in the 1960s. And then, even when some reading material is available, many times this covers ergonomic factors, financial factors, or administration. Few have stopped to dwell on the function

on the function of the media facility within the educational process. We have a wealth of studies concerning the learning theories but relatively little about the teaching theories.

To make matters worse, the great vigorous effort to establish media facilities in the mid-1960s seems to have died away with a certain amount of frustration. In a time when schools need to justify every penny they spend, media facilities are usually the first victims. It is being realized that media facilities cost money, not only as an initial capital expenditure, but also in terms of maintenance and dedicated personnel.

Some of these factors may have contributed to the lack of a precise definition of a media center. We are faced with a number of names that cover, to some degree or other, common ground. Thus the terms, 'learning resource center', 'media center', 'audio-visual center', or 'learning center'. Moreover, all these terms may refer to anything from the small visual-aids support facility in an elementary school environment, to a full production facility attached to some university or industrial setting, or even to a commercial production house. One can explain this situation by showing how the media facilities came to be defined by their usage. In this case the greater part of the thinking process followed the day to day action and not vice versa. In the same manner, the literature about the media facilities evolved out of the day to day experience of

the facilities who were trying to make a headway in the educational process.

Yet all these terms seem to refer to a functional space where the traditional classroom is not the major emphasis. In this space equipment is available for staff and student use under some professional guidance. Students are asked to learn by doing. In the process they are being invited to express themselves. Many times the space boundary within the facility is not so rigid. Some form of movable space dividers are utilized to create areas where different groups can function. It is also interesting to note how ERIC changed their descriptor from "school media centers" to "learning resources centers" in 1980.

This study will not focus on the architecture of the media facility. It will be largely concerned with the infrastructure design of the media facility as part of the educational process. Before anybody goes to the drawing board, some fundamental questions must be asked and answered. This study will try to produce a rational model to serve as a checklist for media facility design.

In many instances, media facilities within education and industry have been treated on par. Though some very basic principles of systems design and service orientation apply to both settings, I feel that a clear distinction has to be made. Industry has the profit motivation which enforces accountability and change in more drastic ways.

Education is more labor intensive, with more lenient measures of accountability and evaluation.

The analytic approach of this study is that of systems theory. The media facility is a system in itself, having certain inputs and outputs. It should have its own system of feedback that regulates both the modification of inputs to outputs, and also the relationship of the facility to the educational process. The media facility as considered in this study is also a sub-system of the educational process. The media facility is an example of a cybernatic system created to improve the learning capabilities of the student.

It is within this larger framework that other problems of personnel, finances, and locations should be dealt with.

Chapter one will highlight the development in the philosophy of the media facility. It tries to answer the question: "Where do we stand and why?" A number of studies will be referred to for this explanation.

The following chapter will outline my conceptual framework for a media facility. Since the facility is intended for service, my philosophical perspective is related to the objectives of the media facility. My intention is to provide the basic questions that need to be asked before any planning be put into tangible forms.

This will lead to chapter three discussing the implications arising from the model. Implications taken up in

this chapter will be questions of size, personnel and their qualifications, the services to be offered and some general principles for the selection of equipment.

Chapter four will continue to discuss implications related to administration, budgets and standards. Stressing the need for further integration, I will deal with the relationship of the facility with the parent institution.

Chapter five will conclude by pointing to some present standards and future expectations. If the facilities are to survive, we need some good creative thinking, and also some modification of structures.

It is my hope that this work will contribute to a deepening of the basic qualities that would make a media facility. May the future of media facilities be brighter than what it has been so far.

Synergy At Work

The presence of the media facility is the result of a number of processes happening simultaneously during this century. The educational process received new inputs from the field of psychology. Technology underwent a process of demystification with remarkable qualitative and quantitative improvement. The social attitude in the world passed from a very monolithic and authoritarian phase into a more liberal and pluralistic society. The concept of elder as the leader in knowledge and society disappeared, giving way to a respect related to knowledge or skill. Add to all this the

experience of constant change which has gained momentum reaching a breathless pace in the 1980s.

The educational system started this century transmitting information in the same Sophists' Method that had existed for more than two thousand years. The learned one would sit or stand before the others and try to pass on knowledge that the others may receive. It was largely a passive process of knowledge transfer. Yet it would not end in the same way. The explosions in the fields of human psychology, educational theory, technology and science would leave their imprint on education by the end of the century. This did not occur due to some pre-planned creative thinking, but was forced on education. The educational system had to improve or die.

Thus, the utilization of media facilities and techology are not the result of a convinced institution trying out proposals for improvement, but the result of an institution, found to lack the needed efficiency standards, trying to make some needed patchwork. This assumption might help explain some of the present situations in the context of media facilities.

In pointing out some of the converging trends, no chronological order is being followed. Many of these trends overlap each other.

Improvements in Psychology and Learning Theory

It is the intent of psychology to try to explain the functioning of an organism. In the case of human psychology we are presented with an attempt to explain how the human organism functions the way it does and why.

One particular area which psychology is trying to unfold deals with the ways in which the human organism acquires new knowledge, which in turn brings about a modification of behavior. Such explanations can be useful for pathological organisms to regain their full composure. But the same explanations can also be very useful to facilitate ways of efficient transmission of knowledge and skills.

The contribution of John Dewey toward the begining of this century stimulated new thinking in educational research. His Experimental Laboratory School in Chicago was a bold adventure. Yet, Dewey reached the public through the works of William Heard Kilpatrick. Kilpatrick undertook to interpret the master's work, adding some of his own thoughts in the process. Kilpatrick also introduced the influence of Edward Thorndike with whom Dewey found grounds for disagreement (Kilpatrick, 1926). This was the begining of the movement of the Progressives in education. This trend has largely been identified with the axiom "children learn by doing".

The 1950s witnessed the presence of Behaviorist Psychology in the educational field. Deferring from the

Freudian and Phenomenological Schools, Skinner (1953) insisted that the study of personality can be referred to conditions existing outside the organism. Though he conceded the existence of other factors in the human organism, their effect was considered insignificant compared to the impact of conditioning from outside the orgainism. Through Skinner's works many came to meet the works of other noted behaviorists like Ivan Petrovich Pavlov and John B. Watson.

Skinner's contribution was not only the psychological framework of personality. He is also remembered for his "teaching machine" (1958). Though this innovation was intended to reinforce Skinner's theory of conditioning, the machine never reached the schools with effective impact. Some hold that the lack of programs for the machine proved to be its downfall. But it contributed the starting point for a concept of individualized instruction. In the process students could be engaged in a learning adventure by interacting with a machine that would immediately reward the student for his/her achievement. Skinner himself thought of this to be a revolution and predicted that it would change the whole structure of education (Skinner, 1954). Theoretically he was very right, yet Skinner underestimated the basic dynamic of human progress which usually takes longer than expected in any task undertaken.

Also, Skinner was harshly criticized for giving the impression that the human being is at the mercy of deterministic fate without having the ability to do anything

about it. To some extent Skinner's studies could be supplemented by those of Clark L. Hull, John Dollard, and Neil E. Miller (Dollard & Miller, 1950). They introduced the theory of the Stimulus-Response which, though using ideas similar to the behavioristic school, make more allowance for all that happens within the individual person. Thus a better understanding of the interactions that take place in the human organism was achieved.

This understanding was to be of immeasurable value within the educational process. It accounts for the fact that both the stimulus and the response are also a dynamic process. Though this knowledge was first utilized in psychotherapy, it soon became obvious that its effects could also be harnessed for educational learning.

Some justified criticism to the behaviorist trend came from a group of people who came to be known in some quarters as the human potential movement. What had started out with the concept of 'self' by Carl Rogers developed further. One of the people who made a substantial impact within this line of thought was Abraham Maslow. He considered the behaviorists to be too deterministic and pessimistic about the human organism. He distinguished basic needs in the human person. In as much as one cannot live without satisfying the biological needs of hunger, thirst, sleep..., so also one cannot live without satisfying such psychological needs like self-esteem, affection, and belongingness. Within his view, the need for self actualization was basic in

understanding what happens within the human person.

In 1954 Maslow tried to explain what made some people healthy, self-fulfilling, self-actualizing individuals. This was to provide a good contribution for some qualitative direction in education (Maslow, 1954).

The work of Jean Piaget reached the United States through the works of people like Hans Furth and David Elkind in the mid-1960s (Furth, 1969; Elkind, 1969). Piaget makes a strong case for the presence of abstract structures in the human learner. This makes it possible to handle more information more economically. The learner goes through a development in the cognitive system. There is a progression from a global undifferentiated system to a differentiated but integrated system.

The value of the social learning theory also had a contribution in the process (Bandura, 1977). Once it was realized that learning can occur through imitation, then it became more obvious that, not only the content was important, but also the method and the person passing the content.

This brief survey of major theories trying to explain human learning processes would be confusing if one were to approach these theories with the "either/or" frame of mind. I believe in an eclectic approach to learning processes. All these explanations share part of the truth without being able to claim a monopoly over it. All gave their contribution in various ways to the psychological background for media facilities.

Improvement in Education Theory

Education involves the healthy growth of the whole human person who needs to learn and constantly improve his psycho-motor, cognitive and affective abilities. Defined in this way, education embraces also the area of inculturation and human development. Bringing the definition to a more managable proportion, education has come to mean the development of object knowledge - a knowledge about something - and process knowledge - a knowledge of how to get at something - related to specific fields. Society tried to achieve this through a specialized institution often referred to as the educational system. While the system involves a high degree of administration, it largely concentrates on the use of psychological theory for the transfer of knowledge in efficient and effective ways. Doubt still exists about the success of the institutionalized system.

All this is supposed to place the learner in a type of global vision. This is supplemented by the environment including the family and neighborhood. It is a pity that we still lack a definition of education that takes into account all the above parameters taken together.

In this way education is different from training, which usually tries to develop abilities directed toward one 'operation'. Training is usually competency oriented. There is very little effort to address this kind of 'operation' into a wider global perspective. For this reason training has largely been left to industry who employs

this retooling process for more effeciency and profit (Kearsley, 1984).

Within these last years the improvement in the field of psychology has made an impact on the theories of education. With the advent of the behavioristic method, education continued to develop into a rigid structure with a more defined method of behavior modification. The behavioristic model was used to redefine more precisely the stimuli directed to a given objective. The system emphasized the need to feed structured information to the learner.

The new insight provided by the social psychologists started a way of thinking into individualized instruction. Also awareness was growing that different persons learn in different ways. Thus experimentation in teaching processes had to be introduced.

A further contribution came from the Phenomenological School insisting that the root of all learning lies in the individual who, out of self-actualization drives, given an enviroment of freedom, can unfold itself. The basic difference with this new thought was that learning would start from inside the person and not induced upon by some mechanistic contraption.

All this evolved into the concept of open education in the 1960s. Many seemed to jump into the bandwagon of the new method, without realizing the implications of the system. Perhaps this was one of the reasons why so many, after

having tried the system, failed to go along with it. Some tried to adopt the new attitude but continued to rate it by old standards; that is, in terms of control and fulfilling a predetermined program.

But a new system needs new measuring tools. If a teacher is opting for openness, then openness must be followed throughout. This would mean that learner needs get priority over the needs of the institution. Infact the institution is there to meet the needs of the learners. Space utilization becomes subservant to the human and humane development. (See Figure 1)

This gave rise to a lot of experimentation with open classrooms. Some opted for a classroom concerned with small group activity rather than concentrated on a mass group. Curriculum development was getting different shapes in different circumstances. The idea of making everybody fit a predetermined idealized pattern and form was fading. The ideas of Dewey, Rogers and others were bringing about subtle changes. Some saw in this a ray of hope that the change needed for the survival of the system was approaching. Others saw the movement as creating a lot of insecurity. But the trend of innovation was not as long lasting as expected.

Yet it was this line of thought, together with the evaluation of the teaching machines that made the media facilities possible. The new facilities would provide stimuli to the learners, while at the same time see to the

Dimensions	Characteristics	
	Open education	Traditional education
intended audience	the individual	the class
instruction	diagnostic	textbook oriented
content	determined by teacher and pupil, varied, wide interests, emphasis on multiple sources	determined by teacher, constant, limited interests, emphasis on single sources
environment	determined by teacher and pupil, moveable, variable	determined by teacher, fixed, routinized
time utilization	flexible, unscheduled	fixed, scheduled
material utilization	multi-sensory, multi-level, diversified, wide range	limited, routinized, undifferentiated, narrow range
activities	personalized, variable	class oriented, fixed
interaction	initiated by teacher and pupil	initiated by teacher
evaluation	personalized, self-assessment	standardized, teacher assessment

Figure 1. Differences between open and traditional education. (adapted from Thomas J. I. (1975). Learning centers: opening up the classroom. Boston: Holbrook Press. p. 5)

individualization of learning. Moreover, the value of self expression could be enhanced. This latter value gained more importance depending on the level of learner abilities, maturity and age. The more mature the learner, the more beneficial would be the facility for the learner.

Improvements in Technology

Even if one were to join Herbert Schiller (1983) in doubting the motivation of the improvements in this field, one would still have to say that this has been the most dynamic area during this century. The many parts produced by the industrial revolution needed to be integrated. Technology tried to come up with solutions. The war provided more dynamism to an already accelerated process. Here the machinery of the whole country was geared toward one objective. But when the war was over the country needed to diversify its production power. The consumer society was created to be able to keep the industry running. But the skills of quantity production, integration and management gained during the war were to be the backbone of many other processes in the years ahead.

The advent of the transistor technology replacing vacuum tubes and relays was a great event. Now electronics could be trusted with a certain amount of high reliability and reduction in size. Cost was reduced making the chain-reaction of demand and supply feasable.

As if this was not enough, within a few years a further qualitative leap was introduced in technology. The

arrival of the silicon chip made possible not only the making of transistors, but also the integration of complex transistor circuits all working toward a common function. The first integrated circuit was developed in 1958 by Jack S. Kilby at Texas Instruments. In the 1980s the VSLI [very-large-scale-integration] was available. Such integrated technology is today present in Intel's 256K bit RAM chip, which is the 'brain' of Apple's 512K byte Machintosh computer. In the meantime the USLI [ultra-large scale-integration] chip is on the way out of the experimental labs. Greater speed and error free signal transmission can now be guaranteed becuae no wiring among parts is involved, and distances of signal transmission are reduced to a minimum. The technology of the disposable printed circuit board is the logical outcome. And we have not seen the end of it. In the year to come we have been promised the 3/8" by 5/8" silicon chip that would store a million bytes of information, equivalent to 500 pages of text.

All this breakthrough occured simultaneously with increased use of the digital signal , increased utilization of the range within the frequency spectrum and the technique of signal compression. Micro electronics helped put up more sophisticated satellites in the geosynchronous orbit. Broadcasting was improved because of greater telecommunications possibilities. Taking all this into consideration, one can start to visualize the cumulative effect of the explosion in the field of technology.

Furthermore, the cost of technology went down considerably. Today one can buy a portable computer with a storage facility of 10Mbytes for less than $3000.00

This development had its impact on many forms of equipment. The 'intelligent' gadgets are becoming more common. The distinction between the television broadcast equipment and the good amateur production equipment is getting more blurred. Henceforth, not only the audio recorder is a common object, but now having some form of radio transmitter is also becoming a common occurance. The explosion in technology has made it possible for every person to become a producer.

However, it is not only the equipment that has changed, but also the philosophy behind the equipment has been changed. Throughout these years, the more advanced the equipment, the more user-friendly it was becoming. Thus while the original audio and video recorders needed a technically minded person as an operator, today these same gadgets can be operated by a child. Improvement was also recorded in the documentation that supports the equipment. And as we move on to the next century we witness the movement to a high-tech high-touch society where technology is increasingly transparent.

The technology explosion has drastically changed previous concepts and possibilities in communication. Transportation of data and people is within easy reach. More and more people are becoming aware that they form part

of a bigger global system. The local school is aware of being part of the district system or even the state system. All this because communication brings all together in a network configuration.

This integration on the macro and micro levels in the field of technology had its effect on the media facilities. The existence of the audio cassette as a means of audio storage made possible many studies, projects, and learning experiences that would not have been possible otherwise. Moreover, this was established as an international standard making compatibility and interchangeability an added extra. To some extent, the same thing happened with the video cassette, even though compatibility in this area is more restricted. We are now promised the introduction of the 8mm video that will remedy this restriction. In the same vein we are also witnessing the impact of the computer on the media facilities. Computer aided instruction and computer managed instruction are already an integral part of many centers.

The film capability was capsulized and brought into the media facility through the 16mm film and then through the video recorders. The audio production was brought in through the advanced cassette recorders. Graphics production is now introduced into the media facility through the computer. Visual aids production can now be undertaken with small equipment in a matter of minutes. What previously was undertaken by great industrial concerns at the cost of great

space and equipment can now be performed within one single room. Consequently not only the structure and capabilities of the media facility have changed but also its appearance.

Another technological event of great importance was started quietly in the Bell Laboratories. It was here that the concept of 'systems analysis' was being introduced. Based on mechanical models of amplification systems, the concept was being transferred to a managerial tool. The Industrial Revolution's progress had brought a huge amount of industrial fragmentation which could only be further enhanced if the bits and pieces could be integrated into a larger whole. In this way all parts would be allowed to specialize --and therefore improve the parts-- and yet converge at the end. Duplication and wastage would thus be avoided, resources would be assigned where needed, making room for flexibility.

This concept was later used across the board for different fields of knowledge. Systems design in planning space utilization was a very positive outcome. Buildings were constructed with a function in mind. The building expert, the safety expert, the ventilation expert... could now be brought together even in the planning stages.

The knowledge of managerial strategy crept in very slowly into the educational system. The leading instructional technologists often expressed frustration that education was about two decades behind its time (Finn, 1956). But when it started to come in, instructional approaches and

theories manifested the influence. The area of instruction came to be considered as a number of parts --the learner, the environment, the teacher, the media and the method-- all of which contribute to the learning process. Each of the parts is related to the total outcome. And change in one element will not necessarily bring about the desired change in the total outcome unless all parts are considered. All the variables are interrelated within a complex network of causal relations.

With this improvment great stress was placed on defined detailed presentation of achievments and/or goals intended by the system. This exercise is then followed by an analysis of means to arrive at the goals specified, and ways to evaluate the achievment.

System analysis improved the distinction between the human and machine elements, making their integration and observation a more specialized skill. Another outcome was the attention given to evaluation. While in traditional teaching evaluation was placed at the end of a project, with system analysis evaluation became a constant factor in the pre-planning and also in the execution phases of any project.

But a thorough understanding of systems implied that not only the variables related to content and learner be taken into account. Now even the architectural design of the environment was involved. Some structural designs are more conducive to learning than others. Furthermore, one cannot make the best use of space unless one takes into

account today's and tomorrow's needs and plan to meet those needs. Going into a building and modifying it with every idea that comes about will never give the unitary effect needed. Planning with a systems approach means coherent design and economical outcomes.

World War II

The military is always one step ahead of the educational institution. Perhaps it is because the military presents the financial potential and the urgency needed to put things into practice. World War II was a case in point. In January 1941, the U.S. Office of Education formed the Division of Visual Aids for War Training with Floyde E. Brooker as director. As America went to war, the U.S. Military Command needed to mobilize a huge number of combat personnel into action in a very short time. Many of the people involved lacked a certain basic level of education. Many had no idea what the war was about.

To solve the problem the Military Command commissioned a number of films produced by Frank Capra, then one of the best Hollywood directors. Seventeen films were produced at a rate of nearly one every two months in a series entitled "Why we fight". Despite the difficulties of war, in the period from January 1941 to June 1945 the Division of Visual Aids for War Training produced 457 sound motion pictures, 432 silent filmstrips, and 457 instructors' manuals (Saettler, 1968, p.163).

Besides dealing with the content of instruction, military designers had to resolve problems of standardization of equipment. This proved to be invaluable groundwork for users in industry and education later on.

In this enormous effort, the Military Command also employed the service of a group of social psychologists. This was the result of an awareness of the individual differences that needed to be taken into account when communicating a message to such a general audience. Results from the study of this work showed that the films helped to modify some opinions, but failed to instill a high enthusiasm for the cause of war, or even hatred for the enemy (DeFleur & Dennis, 1981, p. 293-4).

Whatever the results, this was an attempt to integrate the philosophical-psychological human understanding, learning theory and present day technology. It was to serve as a pointer for the educational process to follow in later years. In the meantime, the trend for integration toward efficient learning continued to be used by the Military Command. Presently the armed forces are integrating the learning processes for certain equipment maintenance with the videodisc and computer technology. The results are very encouraging (Kearsley, 1984).

The Ford Foundation

When finances and attitudes were running low, the Ford Foundation came on the scene providing huge amounts of funds towards the introduction of new methods in education.

The Ford Foundation was established in 1936 with an aim "to receive and administer funds for scientific, educational and charitable purposes, all for public welfare". The Foundation's interest in the field of education could be explained under two main headings: a) improving the formal school instruction and b) improving general education intended for adults. A separate fund was created to take care of each area of concern. The Fund for the Advancement of Education, created in April 1951, helped instruction. The Fund for Adult Education was responsible for improving adult learning.

The Foundation was well aware of the need for extensive education, and mass media were considered as the appropriate remedy. Opinions defer as to the value of some of the projects and research funded by the foundation. But one cannot deny that many of the projects involving media were only possible because the Foundation decided to underwrite the expenses involved. Educational television in the U.S. would not have achieved such a remarkable presence.

Yet projects undertaken by the Ford Foundation were based on the assumption that if an audience was to come in contact with an authoritative knowledgeable person, then learning would occur. The result showed otherwise. In a nutshell the projects failed to take account of the diverseness of the audience (Kemp et al., 1980).

The Situation in the 1960s

The Ford Foundation provided enough support until the decision making bodies of the American political system

became aware of the potential and needs of media within the educational system. This was further reinforced by the launching of Sputnik in 1957 by the USSR. This latter event provided a shock treatment for the educational system. More than ever before objectives had to be clarified and prioritized.

The National Defense Education Act of 1958 is an echo of this. Title III of NDEA provided for funds to enable schools to purchase equipment necessary to support instruction in the fields of mathematics, science and foreign languages. With this fund matching opportunity, money was used to provide language laboratories, demonstration equipment, and television receiving equipment. Title VII of the same act provided funds for research, experimentation and dissemination of information about the uses of television, radio, motion pictures and related media of communication that might prove helpful to educational agencies and institutions.

This was the situation that preceeded the 1970s when another recession was making itself felt even in the educational arena. But now the media facility had become a necessity more than before. The kids of the 1970s were a generation weaned by the media. They had learned to talk, perceive and conceptualize through the media. In the 1980s a percentage of the children that attend the lower grade in schools are already capable to interact with a computer.

The disturbing factor of the 1970s was the shrinking educational budget. The media facilities suffered their share. Gone were the days of plenty (Haney, 1980). This forced the media facilities to think in new ways to look for funding. Many started to look to the community and indsutry for more support. Meanwhile a new generation of media specialists were being employed. The facilities of the 1980s were being judged by their achievments.

Concluding this brief historical survey of the events that led to the present media facilities, I hope to have answered the question "where we are and why". Changes have been enormous. It took more than the developemnt of one single area to provoke this eruption. Moreover, change has become a daily occurance. The need for retraining and retooling of people is increasing. Education is being asked to turn out more efficient learners without taking so long to produce them.

In the meantime, the concept that started out with the "Instructional Museum", passed on to the "Film Library" and then on to the "Visual Aids Lab". In the 1970s this was taken over by the "Learning Resource Center" to be superceded in the 1980s by the "Information Resource and Transfer Lab".

CHAPTER II

THE MEDIA FACILITY

A Conceptual Framework

The characteristics of any media facility are the outcome of a philosophical approach. This second chapter will deal with the basic parameters that help decision-making-bodies or persons establish the specific characteristics that mark a particular media facility. If the principle of "form follows function" is to be adopted, then it is possible, having established the parameters of a particular facility within this model, to pass to the drawing board and then to reality. When this step is overlooked, or undertaken with lack of concern, the facility will pay for it later in terms of waste, unwarranted obstacles, and perhaps failure.

Given the changes in technology and education, then it is also imperative to plan keeping in mind the parameters for the next two or three years. Planning is the art of conceiving the future with its needs and meeting those needs in gradual steps. The possibility of becoming obsolete even before starting to function is an ever increasing danger.

Having said this, I want to make it clear that at some point action is needed. No amount of thinking and

discussion will solve all the problems of a media facility. A media facility starts to be the moment it starts to function. Someone will have to be responsible for striking the balance between foresight, planning and action. Whatever the decisions, all concerned should look at the media facility as an open ended statement. New objectives will always be taken up later on. Consequently an essential quality of any media center will have to be flexibility in content, personnel and space administration. All this should be given due consideration in the planning stages.

A media facility can exist in two distinct settings. On the one hand, a facility can be created as a commercial enterprize, separate from any other instituiton, to provide a service within a geographical area. In this category, facilities trive by providing a specialized service with ancilary services being handled by other specialized commercial facilities. Some of these enterprizes have grown to become full production houses especially in the big cities. On the other hand, facilities are also created within institutions to help the parent institution achieve its goals. Typical examples of such institutions are industry, the military and education. Within this set-up a facility is accountable to the parent institution and gives services by providing support for and/or training design. These in-house facilities are intended either to provide a dedicated service or a general service.

There may be various reasons for an institution to opt for an in-house facility. Security, finance or reliable fast turn-around are often quoted as reasons for making this choice. Other institutions want to have a facility that is tailor made for their objectives. Dedicated facilities are usually the most expensive to run.

Media facilities intended for general services can further be subdivided into two categories: those that are subsidized and those that try to cover their costings with some profit. The latter use a chargeback system of operation. Educational media facilities fall into the category of the subsidized general service facilities.

In some instances the above distinctions are not clear cut, since overlapping exists in different settings. Arguments can be brought in favor and against each category. All hinges upon the facility fulfilling the requests of the institution in an efficient and economically feasable manner.

Though there are some common denominators for media facilities within all these settings, usually they are different in methods of managment and production processes. Not only would they have different objectives, but also the ways of achieving those objectives would be different.

Because of this, I have chosen to focus on the educational setting and propose a model for a media facility within this context. It will be the task of the reader to

sift what is said, critisize it, and go on to apply it for other settings.

Media facilities within the educational system are usually a subsystem having their own resource inputs and providing an output. The inputs might include a location, a name and status within a structure, personnel, funds and other utilities used in common with the educational institution. The facility within an educational institution -as different from a commercial enterprize- is part of a network of information resource and retrival. When compared to a facility within an industrial setting, the educational facility is usually more embracing in its objectives.

The qualities endowed by the parent institution are the very first raw materials that designers have to work with. The question of name and status is very important. Using these resources, several media facilities managed to acquire equipment and funds that would otherwise have not been available. In such a setting, the media facility can often 'piggy-back' on its parent for basic services. Some hold this to be a disadvantage, yet it also has financial benefits.

This can explain why sometimes a bill for work done by an educational facility might run less than a bill for similar work done in a commercial facility. The media facilities within education are not taking into account the hidden cost. The overheads of the facility are being paid by the

institution. In similar cases, what might appear to be a 'profit' by the facility will in effect be a subsidy.

In return, the media facility has to manage the given resources and meet the needs of the educational institution with a service directed toward media support or more efficient instruction. The needs presented by the parent institution would become the objectives for the facility. This does not mean that the facility is to be limited to the needs of parent institution only. Other objectives can also be embraced. But the only way a facility stands to justify its request for resources is by meeting these needs. Unless this is firmly kept in mind the whole project is doomed for failure.

In its internal constitution the media facility can be defined as a managment of information and equipment in order to give a service. (See Figure 2) Using the words of Margaret Chisholm (1976), I would further break up the information segment saying that the facility has "the function of identifying, acquiring, storing, retreiving, and making information available in a variety of formats..." (Information Futures, 1976. p.6). The media facility within education is primarily involved in transfer and support of information. Equipment becomes important because it embodies information, or makes tranfers possible.

Following the ideas expressed by Merrill and Drob (1977), one can also talk about the internal structure of a media facility as a function of three elements: (See Figure 3)

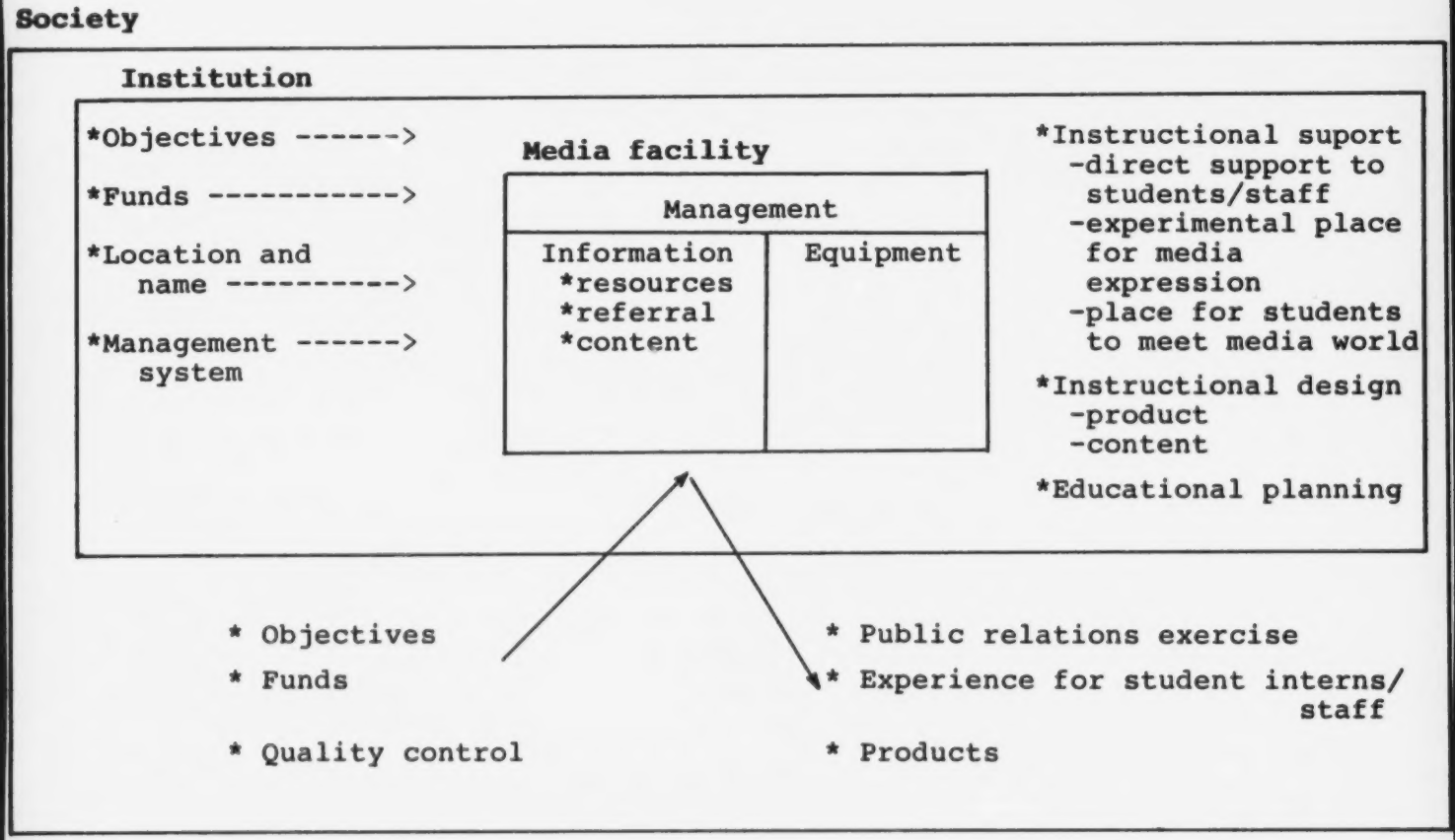

Figure 2. A media facility within an institution in society.

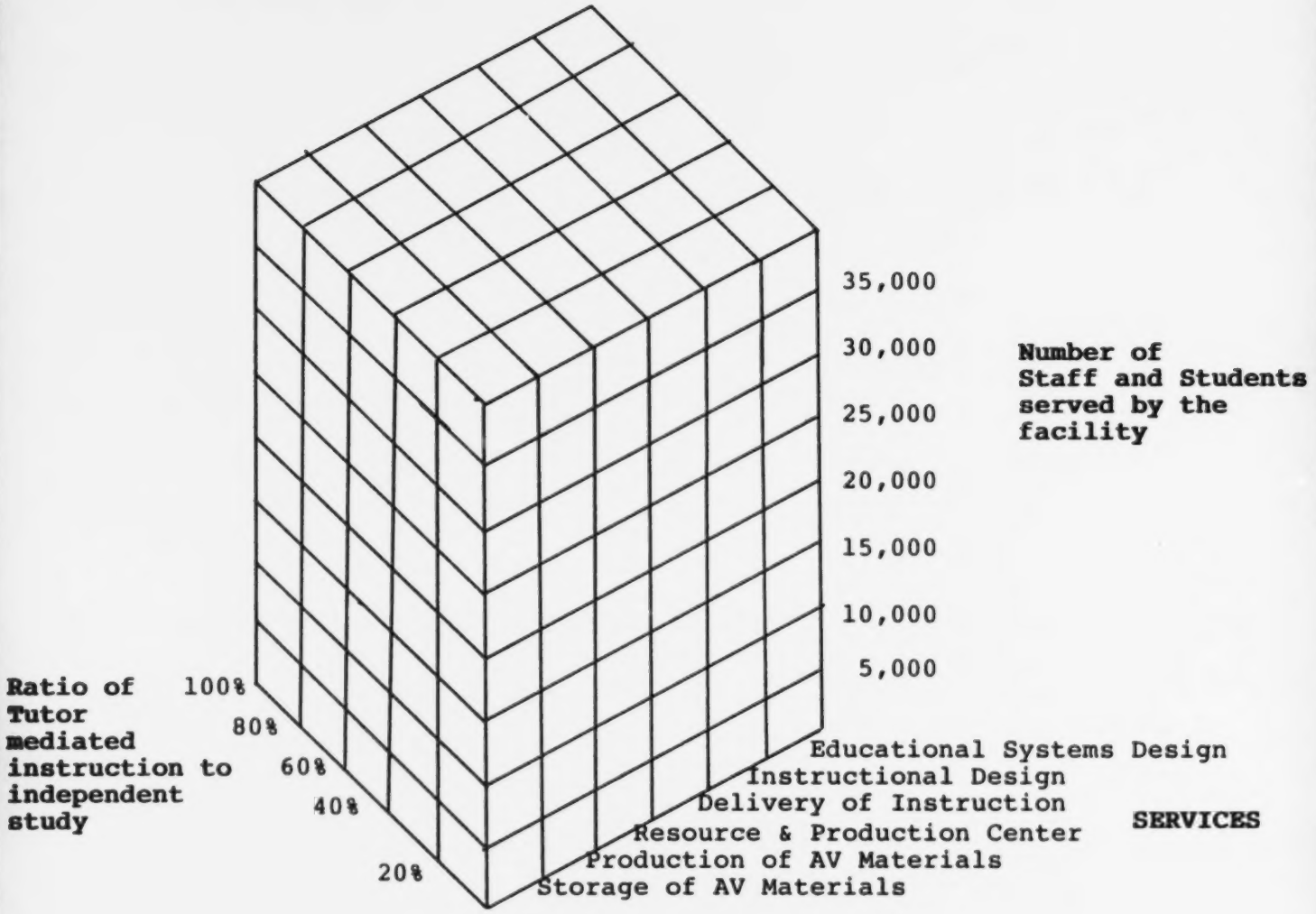

Figure 3. Parameters for a media facility.

1. Type of production/support/service intended by the media facility. This will be equivalent to the objectives of the media facility. To get this factual information one would ask questions like, "Why do we want to have a media facility? What do we want the media facility to achieve? What kind of service shall the facility offer?" Many times these questions are initiated by the parent institution. But if the media facility is interested in becoming more relevant within its environment, these questions have to be faced periodically as a self-evaluating process.

2. The number of students and staff that make use of the facility. This data may also be another 'given' by the parent institution. Yet it falls upon the media facility to improve the qualitative and quantitative contact that people have with the media. It is common knowledge that the great amount of users predicted to be using the facilities never turned up (Meierhenry, 1976). One can safely say that a discrepancy exists between the target of the parent institution and the number of actual users. This should not lead to a fight for statistical numbers. The media facility should not be running after more users because this justifies a budget, but out of a conviction of more efficient learning. Statistical data is easily achieved, but the convincing of people toward a new method of information manipulation is harder.

3. The amount of time that each person is expected to use the facility. In the case of students, occasionally,

the parent institution might make a decision regarding the expected ratio of time the student attends classes and time devoted to independent study. Several institution have this expectation written down as a requirment for students. Yet, unless the institution spells out similar expections for staff the system would be incomplete. It is the task of the educational institution to encourage, through incentives, the use media by faculty and staff members.

At the initial stage of its existence, the media facility is dependent on these three elements as stipulated by the institution. But then comes the role of the media professionals who can lead the facility into a dynamic process of growth, at times beyond what the parent institution ever expected. Whatever the progress, the essential validation of any new initiative is how much this provides "information to the user at the time the user needs it and in the most appropriate format" (Chisholm , 1976).

The first step in media facility design lies in the proper establishment of where the facility will stand if plotted against these parameters.

Each of these parameters can be further unfolded to reveal other subdivisions. Each has multiple levels of being within the educational system. Through a decision making process a facility can decide to move to a certain level. When such a decision is taken in a conscious way --and shared by all in an open managment system-- a number of benefits can be gained because people are probably decided on

a conscious effort to converge. The problem arises when such decisions are brought about due to omission or hidden agendas. This situation brings about confusion, implies a lack of clear objectives and is probably an indication of waste and frustration.

Unfolding the first element mentioned above, I can describe six major areas that might form an objective for a facility. Each area, once accepted as an objective, can be further explained into more detail to meet the specific institutional needs in a particular area. Time devoted for clarification of these areas will then reveal implications for personnel, space and equipment. In my outline I am starting with the least complex moving into more sophisticatedv forms of existence. In this explanation, I feel the need to modify somewhat the categories of Merrill and Drob (1976) to reflect more the development in this field.

a. The media facility stores and provides visual aids support. At this level of existence the facility acts as a clearinghouse for basic equipment and materials which may include anything from a filmstrip, slides, audio and video recordings educational games... This function is similar to a non-print library. Limitations can be exercised as to what type of media products the facility would be able to serve. Time will be spent on classification of media and equipment. The equipment needed will have to be able to "playback" the different media housed by the facility, and convert the information into codes discernible by the

human senses. A decision will have to be made as to the extent of 'reaching out' service to be provided. Is the facility going to be responsible to deliver the hardware and software to the classroom, or will the instructor be responsible for picking up the materials from the facility? At this level of existence, the facility has no control over the production of teaching aids. All materials are either commercially acquired or produced on special orders. The first option would be least expensive, with the disadvantage of not being tailor made to one's needs.

b. A media facility could decide to go into the production of simple products for use by the teaching staff. In this case the teacher would present his or her needs and the facility would go into the production of requested materials. Such a facility would be involved with the production of slide, overhead transparencies, charts... Many times media are utilized in support of verbal presentation. Going to this second level necessitates the availability of production equipment. And since it is being assumed that in a small facility one is unlikely to find technical personnel backup, then the equipment chosen must be fairly durable and easy to operate. Through my experience I can say very often this kind of media method is used as a mere support to the platform lecture styles. This learning experience is still a Gutenberg experience, and cannot utilize to the full the benefits to be gained from an audio-visual experience. Using the media as a mere subsidiary to

traditional systems fails to appreciate the dynamics of the new culture. It takes creative thinking to be able to make best use of media and technology.

c. At a higher level of existence, the objective of the media facility would be to provide an experimental production environment for student and staff. Both students and staff are intended to have more direct involvement in production. The production itself becomes the expression of some need or educational objective both in content and method. For this reason the facility will have to provide room for the preparation of media supports, probably a television studios and possibly a radio set-up for training. At this level of operation, a characteristic of the mid-1980s has been the addition of the computer as a tool for learning. Without going into the debate of a definition for computer literacy, I would just say that some have introduced computers as a tool for improving skills, while others have introduced the machine for programing. I see this level of existance as being qualitatively different from the ones already described. It is at this level that the facility is truely immersed in the audio-visual culture. The equipment needed at this stage is quite sophisticated. The facility will not be able to do without a good technical personnel backup.

d. A media facility might decide to be responsible for the delivery systems of instruction. This includes anything that helps deliver instruction from one person to another

across some distance. Technically this could mean anything from just an audio tape distribution system to a sophisticated microwave system or even a low-band transmission facility. Though not directly concerned with the content of instruction, in the last years, many facilities have taken this objective. Some have invested into the CCTV system, while others have gone far enough to invest into microwave or cable transmission. California State University in Chico reaches out throughout the northern California through an ITFS system.

The question of media delivery systems has a long history. Suffice it here to mention the NAEB "bicyle" network in 1949 (Wood & Wylie, 1977), and the MPATI super transmitter experiments funded by the Ford Foundation in 1961 using a modified DC-6 aircraft (Wood & Wylie, 1977).

I anticipate in the years ahead that this function will gain more importance. With the growing trends for adult education and moving instruction to the people, then investment in this service is warranted. In thinking of new systems of delivery one has to remember that the facility can no longer address an undifferentiated mass audience. Delivery systems must be capable to address smaller specialized audiences with the capability of immediate feedback. A delivery system may also move beyond its immediate parent institution by expanding its outreach through a system of networking with other institutions. Teleconferencing can be a very important function in the media facility.

e. A higher objective for the media facility would be to get involved in the design and production of instructional modules or programs. At this level the facility would acquire the role of an expert or consultant to the designing of systems that analyse an instructional need, and provide evaluated systematic education to counter the situation. Here the facility is not only responsible to provide the support for the transfer of information, but creates a method for such a transfer and its evaluation. This role is qualitatively differnt from the other services described so far, and consequently the type of skills required are also significantly different. If teamwork was unavailable in the levels explained above, now it starts to be an indispensable tool for reaching objectives.

f. The highest objective for a media facility would involve the same facility in the educational system planning. In giving this service a facility moves beyond instructional design and proceeds to work with a larger integrated vision of the learning process. In this role the facility contributes to the parent institution alternative ways that increase learning efficiency. In this perspective variables like architecture, climatic conditions... play an important role.

Reading through these levels of existence, anyone familiar with media facilities would surely point out that such clear distinctions do not correspond to the reality of facilities. The presentation above is only a model

Low objectives

Area of work		RESPONSIBILITY	FUNCTION
AV SUPPORT (print predominant)	1	House and classify materials: slides, filmstrips, tapes for staff	Non-print library storage
	2	Produce and store media supports for instructors and staff	Audio-visual center
MEDIA EXPRESSION	3	Provide experimental place for staff/students to create & get training in various media: TV, Radio, Photography, Slide-tape...	Resource and production center
CONTENT DELIVERY	4	Teaching and training delivered to classes and remote areas through different technologies: audio, video tapes, CCTV, microwave...	delivery of instruction
DESIGN	5	Media facility personnel are approached as experts to design courses for more efficient and effective transfer of information	Instructional design
	6	Media facility personnel are approached as experts in systems design to contribute to an educational environment that facilitates training and education	Educational systems design

High objectives

Figure 4. A media facility: objectives.

to help analyse the reality involved. All the services outlined above can be considered to exist on a continuum of ever increasing complexity. A center would probably start somewhere low on the scale and assume higher roles of service as it keeps trying to meet the needs of its patrons.

The different media settings mentioned in the beginning of this chapter can be plotted within the framework proposed. The general services facilities would be described by a line on the service axis. The specialized (dedicated) facilities would be presented by a point. This for the obvious reason that dedicated facilities would focus on one particular area of service to maximise profits.

Very little needs to be added to explain the second functional element of media facilities. Number of users is related to the number of staff and students within the parent institution. Addressing this variable one must take into account that services rendered to staff are different from those rendered to students. Consequently time allowances must reflect these differences. Different services to the students also require different time allowances. A computer working station makes demands that are different from a photocoping station.

Consideration must be given to the people who are returning to the educational institution as part-timers, usually after a day's work. Service to these people would also put forward specific demands.

The way of calculating the number of users is another point of difference for media facilities in different settings. While the dedicated general service facilities justify their presence by quoting members belonging to the parent institution, commercial facilities count their numbers based on paying customers.

All the parameters outlined in this chapter are to be taken in the context of service. This is the reason for the existance of any media facility.

> The service concept (the right materials at the right time in the right place for the right teacher) and the technical concept (good presentation under proper technical conditions) are fundamental requirements for the new technology.(Finn cited in McBeath, 1972, p. 13)

Having outlined this conceptual model, all questions regarding the implications that flow from this explanation will be discussed in the following chapters.

CHAPTER III

IMPLICATIONS: PHYSICAL CHARACTERISTICS

Having outlined one of the possible ways to analyse a media facility, I would like to prceed and point out some implications for the model. This chapter will deal with physical implications, namely the questions of size, facilities, personnel and equipment. I am not going into the specific details of interpreting the implications. This has to be done by the media professionals on the spot. I will point out to questions that need to be asked before any decision is taken.

Size

The size of a media facility can be determined by calculating:

expected output x time of expected media use x number of patrons served

The expected output is derived from the objectives of the media facility. If a phase one output is expected, then size is related to storage of books and equipment, and circulation needs. But if the expected output is a second phase goal, then size must incorporate space for a media production workshop. A third level facility output will put far greater demands on spatial dimensions. These demands are

only the result of equipment and bigger production areas, but also because of more users. Moreover, the amount of time spent by the users in this kind of facility is significantly higher. Space is required for video and audio facilities, space for visual reproduction hardware, space for staff and managemnt offices, and space for storage of equipment and sets. While the first two phases can be served with 'normal' buildings, this phase of media facility existence demands more specific dimensions.

The fourth phase of media facility does not require to much extra space. Today electronic distribution centers can be housed in relatively very small areas. As for transmission equipment, most of this can be housed on top of existing buildings. An investment in computer managed systems will further decrease the need for space. On the contrary, the fifth phase of media facilities will require more space for all the designers involved. If a sixth level objective is intended, the facility must have space for people to meet and discuss for prolonged periods. Little, if any, extra space is required if, as will suggested later, people at this level are contracted on consultancy basis. Appendix A gives some basic standards as set by the American Library Association for media programs and facilities.

Whatever the objectives, a media facility cannot do without multi-functional areas that could be used for different group sizes, lectures, and individual work. Flexibility in space utilization is an essential asset.

When establishing the size of the facility, attention should be given to aesthetical presentation. The architectural design and decoration of the building itself ought to be a statement of the objectives and goals of the facility. Accesibility to materials ought to be inviting through the layout of the facility. And if teamwork is being encouraged, this should also be reflected in the availability of open areas and planned group facilities. A number of creative expressions can be explored where new buildings are being planned. If older buildings are being renovated these criteria should still be taken into account and incorporated.

Whatever the present choices, designers of media facilities must plan for future adaptation and expansion capabilities. If, as has been stated earlier, the media facility is an open-ended statement, then one must leave room for future needs.

In a nutshell, media facility design needs to have flexibillity in space configuration. What is presently being utilized as a large group learning environment, might need to be converted into small-group spaces, or vice-versa. The media facility must be planned to be able to outgrow its present dimensions. New goals and equipment will require a different set up. Planning with foresight will help the facility to meet future needs with relatively low costs.

Personnel

Even if the media facility were to have the best equipment available, it is only its personnel that can convey the value of its utility. Many a time the media facility is identitified and tied to the persons that carry its logo. And investing in the right personnel is at times more crucial than investing in the latest equipment. I believe that the product from a combination of the best equipment and mediocre personnel is inferior to that of mediocre equipment and creative personnel. It is surely best to have both.

The "Standards for School Media Program" (1966) recommends that a media center have a full-time media specialist for every 250 students, or a major fraction thereof. Rather than working on this assumption, I would follow the needs of personnel through the different objectives of a facility.

There are some basic qualities that should be present in all media facility personnel. Given that the existence of the facility, de facto, depends on good public relations, personnel should be aware that 'clients' will use the facility in as much as they feel that their needs are being met.

Experience is indicating how education is suffering because of its labor intensive characteristics. A media facility should plan not to fall into the same trap. The investment in technology that can perform mechanical routines

is highly encouraged. It is more rewarding if people are employed to manage and create better learning possibilities.

Another consideration to be taken into account is the utilization of student interns, especially in higher education. This should not be an equivalent cheap labor devices in a time of economic stigency. Students come to school to learn, but some of them, given the initial push, can also contribute to the media facility. Given attractive incentives in accedemic credits or stipends the media facility can recruit students who can gain a valuable learning experience. However it is imperative that the students will have some supervision and feedback. Without good feedback valuable time and learning potential are wasted.

Neither should external helpers be discarded. Sessions at the 1985 AECT Convention held in Anaheim on January 17-23, stressed this point in a very eloquent manner. There might be people within the local community who have the skills needed by the media facility and who can spare an amount of time. At the convention, retired personnel were pointed out as a very likely resource.

At a time when education and industry need to come closer together, the media facility could find some industrial enterprize as another resource. These entities should not only be considered as a financial or equipment resource. They can give the media facility direct help in planning, administration or content expertise. Access to personnel in industry should be considered as the best resource. All this

can give to the facility better exposure and community contacts. Needless to say, helpers should be screened in relation to the facility's role and needs.

The question is often asked as to what would be the ideal qualifications and skill for people in a media facility. Trying to answer this question I go back to the analysis of chapter two. The type of skills needed are related to the goals of the center. Each phase in the life of the media facility has particular demands.

If the media facility is intending to live at a very basic level, namely being a library and clearinghouse of visual aids supports for instruction, skill of materials collection, classification, circulation and maintenance are needed. At this level a qualified person might be one who applies the rules of the print collection and classification to a very wider area encompassing the non-print materials. If the person has some knowledge of media utilization, then this would be an asset, because the employee at the center will have to demonstrate the use of the equipment to staff in order to encourage more use.

Since, most probably, repair of equipment will be done out of the center, personnel need to keep a good referral service to guarantee that such repair is done in the most efficient way. Even at this level knowledge of computer manipulation is a necessity. Circulation of books and other materials can be easily computerized. With the advent of low-cost optical readers and bar code identification, a

library system can be devised for relatively low budgets. Such a system would record items on loan, items on shelves, and also build statistical data of utilization frequency. Besides serving as a planning aid, such a system would free the librarian to spend more time developing the collection and interacting with staff.

A facility going into the phase of production will also need personnel with library skills, but media utilization skill are more accentuated. It is very likely that at this phase the fcility will have to differentiate roles by employing more than one person. Thus teamwork skill will become a necessity as well.

Personnel at this level will have to show a technical capability in production processes. Yet one must not only be able to produce slides, overhead transparencies' posters, photocopies..., but also be able to discern when using one medium is better than another in terms of cost and target objectives. Obviously some elements of design layout are desired. Presently personnel employed as 'media producers' lack a solid background in psychology and instructional design. In years ahead, personnel will be required to show good understanding of educational theory and its application.

At the next phase of facility existence, more differentiation of roles occurs. The library service and media production services become highly differentiated. Producers are employed who are experts in the manipulation of different media. Other people will be employed as technical

experts responsible for repair and maintenance. Other people will have to be employed to fulfill clerical duties. These will be responsible for secretarial work, purchasing, scheduling of space allocation... Lastly such a facility would need good managment oriented people.

The question of management can be a thorny issue. Should a facility go for a person with efficient management skills, or should a facility look for an instructional expert who has some ability for management? A correct mixture of both is needed. If both are not well balanced, then friction will arise when due to efficient management, demands are made that might hinder the priority of instruction as the main objective of the center. This friction is bound to come up when the facility is working under controlled budget.

At this level a facility should be able to employ personnel whose responsibility it is to guide students who want to undertake some individual or experimental study within the area of media manipulation and effectiveness. This advising service could also be offered to staff who want to try out new systems of mediated instruction.

The personnel employed for the next level of media facility service must have good technical capability. No facility can afford a system with a reputation for breaking down. The facility must employ enough personnel to maintain and repair the system on standby basis. The skills of management for this service require also a wider vision. A facility will have to employ personnel with good

coordination skills that the distribution may run smoothly. If the distribution reaches beyond a specific campus, then personnel who take charge for packaging and shipping are also required.

A facility wanting to give instructional service will have to employ instructional designers. They are the people who will make suggestions as to what can be passed on to the learner and in what medium. At this level the management skills needed are not only related to equipment, space and financial coordination, but more related to the coherence in instructional methods. Different instructional designers come out with different suggestions when faced with the same situation. Management must have the great skill and ability to lead to cooperation among the personnel, lest the fertile diversity of personnel prove to be detrimental to the center.

When the media facility is involved in educational systems design, then other skills have to be brought into the team. People with architectural and decorating skill will be part of this team together with technical and systems experts. At this level many of the personnel could be contracted on a freelance or consultancy basis meeting periodically as the need arises for projection and planning. An investment at this level might give the parent institution good economic and aesthetic returns. Within this team of experts managment will take the role of organiser and facilitator.

Area of work		RESPONSIBILITY	PERSONNEL/SKILLS
AV SUPPORT (print predominant)	1	House and classify materials: slides, filmstrips, tapes for staff	-Librarianship (classification, circulation, collection building) -Media utilization
	2	Produce and store media supports for instructors and staff	-Library skills, Media utilization, production techniques, education theory and design
MEDIA EXPRESSION	3	Provide experimental place for staff/students to create & get training in various media: TV, Radio, Photography, Slide-tape...	-different media experts -technicians -management -coordination & scheduling -media advisors
CONTENT DELIVERY	4	Teaching and training delivered to classes and remote areas through different technologies: audio, video tapes, CCTV, microwave...	-good systems technicians -coordiantion skills
DESIGN	5	Media facility personnel are approached as experts to design courses for more efficient and effective transfer of information	-good personnel management -instructional designers
	6	Media facility personnel are approached as experts in systems design to contribute to an educational environment that facilitates training and education	-good personnel management -systems designers -an array of experts in psychology, education architecture...

Figure 5. Personnel/skill for the media facility.

Needless to say that the higher the objective, the more teamwork becomes an indispensible element. Unless a center creates such a team work it has little chance of a meaningful survival. Even if the center manages to survive as a dynamic entity because of one leader, what will happen when the leader leaves? Even if leadership is guaranteed, still, cross-fertilization is still badly needed.

Equipment

It is not my intention to cover specific philosophies for media selection. This work has already been undertaken by others such as R. Bretz, C. J. Duncan, L. J. Briggs, and R. M. Gagne (Heidt, 1978). I am interested in giving some general guidelines about selection of equipment.

Before deciding to buy any piece of equipment, whoever is responsible will have to evaluate how this will fit into the overall situation of the facility. Will the equipment be compatible with other equipment already in place or intended for the facility? Sound decisions can only be taken if one approaches equipment as a system.

Good cost estimates will have to include the initial capital investment, the cost of maintenance, the software needed for the machine, and depreciation. A guarantee for parts should also be considered. Revox-Studer Company in Germany guarantees parts up to ten years after the model has left the factory. Very few production companies would go this far. Yet such guarantees are worth considering because

within the educational institutions changing equipment ever so often might be impossible.

Will the equipment be used in the 'self-service area' or in the 'do-it-for-them area'? If the former is the case, then ease of use is a necessary asset. So also is a sturdy makeup. A machine in the self-service area must be able to operate smoothly with minimum instructions. Ease of use should be one slogan in every media facility campaign. One must also question whether such a machine will require the continuous presence of an operator. If one is needed, then his salary should be included as part of the costings of the machine.

For the first level of service, the equipment needed has to be in the form of 'playback equipment'. A decision has to be made whether every piece of equipment would be placed in a central area, or whether a certain amount of hardware would be available in every teaching situation. If total centralization is chosen, then the facility must counter the tendency of users to "avoid extra trouble". In places where all media is centralized, unless the users are highly motivated, the equipment will not be used. Placing equipment in every learning station is a costy decision but makes equipment readily available. Yet it does not guarantee utilization. A facility should take it upon itself to evaluate the use of the media for instructional purposes.

At the most basic level 'playback hardware' would include flannel boards, overhead projectors, slide

projectors, filmstrip projectors, audio recorders.... If one is planning a facility for the mid-1980s then video recorders and at least one good large screen video projector should also be included.

Passing to second level objectives, all that is said for the equipment at the first level is being assumed. Added to it the facility needs to have the equipment to produce media supports. This would include copystand photographic equipment, overhead tranparency makers, lettering equipment, chart/graphs making equipment, photocopiers... The center will have to decide whether to employ a media aide to help the staff get the service they need. If a decision in favor of a self-service area is taken, then job aids become indispensable.

Level three objective require a lot of equipment. Some of the equipment needs have already been mentioned in levels one and two, but other equipment has to be added. In the case of a television set-up a number of cameras and recorders are needed. These must be patched to a video switcher, gen lock and time-base corrector. Probably such a set-up would need a character generator, and perhaps, an electronic graphics generator for illustration purposes. At this level audio production booths are also required. Each would have audio recording equipment, some form of audio mixing device, turntables, and an oscilator for equipment calibration.

If broadcasting is undertaken, then transmitting equipment and antennae are required. Though these might be operated by students in their capacity as interns employed by the center, normally such equipment would be placed under some security.

A distribution system would involve a number of playback hardware. It would be helpful if all playback within a campus or school be compatible. Non-electronic delivery systems will require some form of transportation and packaging. Electronic systems are based on some form of 'wiring' to cover a specific area. This can be supplimented by microwave links or satellite transmission. Such a system would always involve a huge initial investment which one hopes will pay its return in quality and service.

A facility deciding to support instructional design will not require a high investment in equipment. At this level the focus of investment is more on personnel. If a media facility has developed so much as to be able to offer this service, then it is very likely that the equipment that is needed is already available. This same argument would hold for a facility deciding to give a service in the field of educational systems design.

Facilities

A media center is identified by the service it offers. Each type of service can be translated into a facility. Several decisons have to be taken as to what services will be

will the center be offering and how will the service reach the 'clients'. It makes a difference if a center opts for a 'do-it-for-them system' rather than a 'do-it-yourself' system.

Whatever the choices, decision makers must keep in mind that some people are still afraid of, or untouched by the media culture. If a parent institution is judged high on a scale of negative attitudes to mediated instruction, then decision must take this into account. In such a situation it would be more important for a center to emphasize what can be gained from the opportunities offered rather then dwell on the beauty of sophisticated equipment. The services offered must bring the objectives of the facility to a people who already have certain attitudes and traits. Before people can have a chance to judge the worthiness of an instructional module, the facilities play a decisive role. A first impression of a media facility might win or loose a 'client'.

Centers should aim at being both functionally and aesthetically integrated within a setting. The best of posters on a dirty wall will always remain an eye-sore. There must be adequate relation between the foreground and the background to provide harmony. Ill designed facilities can be a cause of fatigue (Castaldi, 2nd ed., 1982). If this happens the learning experience might be involved in an existential contradiction that hinders its effectiveness.

Besides offering facilities to staff and students, a center must also offer support to its own staff. Media center management will need to create institutionalized support for the continued education of its own personnel.

Having outlined some general ideas about the services, now I will related specific services to the different objectives of a media center.

As a basic service, 'playback' facilities have to be offered. If a center has developed a film library then a learning station with a projector and screen adjusted for keystone effect is needed. The media facility will have to decide whether to have such facilities in each learning station so that any instructor can make use of them. In this context every learning station should have a film projector, slide projector, audio recorder able to read synchnization pulses, and an audio amplifier. Consideration must be given to security measures and insurance coverage. Having equipment in each learning station would be incomplete unless the media center makes it imperative on the staff to learn how to operate the equipment.

To reach second level objectives a center will have to add a production space together with the facilities outlined above. The center should have facilities for producing slides, posters, transparencies, and working space for materials preparation. Such a production area will need a related storage facility for the 'clients' as well as for the media specialist.

For third level objectives, the media facility has to offer a working environment for large and small groups with informal seating possibilities. These meeting areas will supplement facilities for audio and video productions, video editing production, and graphic layout facilities. In each area there may be some distinction between the do-it-yourself and do-it-for-them areas. Annexed to the audio and video studios the center should offer rehersal facilities. Such spaces should be functional enough to serve as a classroom before one goes into the studios. In this way studio time will only be taken for production purposes thus allowing for maximum use of studio area. In the case of audio production, while a full studio set-up may at times be required, in many instances work can be accomplished in audio booths with an area of less than 20 sq ft. This would increase production and experimental possibilities.

The center must also provide adequate office space for all its personnel. If media specialists are being employed for the purpose of advising, then the center must offer space for this activity. Even if such a service might initially appear as a strain on budget, in the long run it will provide better media users among staff and students.

The facilities offered by the center responsible for delivery systems are related to the type of distribution chosen by the center. But any distribution system should be supported with immediate feedback and personal contact to facilitate transfer of information. If an audio tape

distribution is chosen, the center can try to link this up with a library service. A telephone line connecting the user to the content expert might enhance learning. The same holds true for any CCTV distribution, video tape distribution, microwave system, or satellite delivery system. The more support to the system, the more chances of survival. Using an interactive component, distribution systems might avoid the failures encountered in the 1960s when education was mass produced for a mass audience. Support systems like those used by the Open University in the U.K. should be strongly investigated (Perry, 1977).

In this context I would even suggest the use of a computer remote bullettin board for the sharing of information by all concerned. The availability of computer technology can make such tools very inviting and cost effective.

A further suggestion to be considered by the media facility would include a convergent reference point for all the personnel involved in this venture. Management could offer a contact point where all personnel --technicians, instructors, student interns...-- would all feel a sense of direction and belonging to the facility. Such a service will be reflected in products and processes.

When a media center goes into the fifth phase objectives, the greatest service is the availability of instructional designers to any staff requesting the help. Since such a service is still relatively new, the media facility must advertize such a service with tact and skill.

Furthermore the center must offer the instructional designers the possibility of interaction within the facility and with collegues in other centers. Periodic audio teleconferences and exchange of scholars can be highly beneficial in updating skills in this expanding field.

Fulfilling sixth phase objectives, the facilities offere d are related to interaction among experts to bring about cross fertilization of ideas. In turn this would become a resource think tank for the parent institution. The media center should help the expert team to indulge in futuristic projections and model building alternatives in education.

The physical implications following from the model described in chapter two can be very far reaching. I hope that the ideas unfolded in this chapter, though not exhaustive, will provide a sense of direction for media facility designers. More can be achieved when such thinking is undertaken within a specific existential context.

Area of work		RESPONSIBILITY	FACILITIES
AV SUPPORT (print predominant)	1	House and classify materials: slides, filmstrips, tapes for staff	'playback' equipemnt in each learning are or specified areas, Indexing, storage...
	2	Produce and store media supports for instructors and staff	'playback' & production equipment with ancillary software
MEDIA EXPRESSION	3	Provide experimental place for staff/students to create & get training in various media: TV, Radio, Photography, Slide-tape...	-photographic facility -video/audio facilities -advising facilities -experimental spaces
CONTENT DELIVERY	4	Teaching and training delivered to classes and remote areas through different technologies: audio, video tapes, CCTV, microwave...	-delivery services -standby repair facilities -support for delivery systems.
DESIGN	5	Media facility personnel are approached as experts to design courses for more efficient and effective transfer of information	-office space for desigers -advising and support to staff -functional spaces for experimentation
	6	Media facility personnel are approached as experts in systems design to contribute to an educational environment that facilitates training and education	-meeting and planning facilities

Figure 6. Facilities offered by the media facility.

CHAPTER IV

IMPLICATIONS: ADMINISTRATION

This chapter will deal with implications involving the administration of the theoretical framework already described. Some implications deal with management, others deal with the question of centralization-decentralization, standards and finally budgets.

The administration of a media facility is responsible for utilizing all resources --human abilities, equipment and funds-- towards more efficient and effective transfer of information. Service to the instructional function should always be the underlying target of the media facility.

In terms of general service, the grid provided by Thomas E. Miller (1974) is a very helpful tool for analysis. (See Figure 7) Miller plots the different options of a facility that tries to balance the concern of giving service to students and staff together with the concern for policies and procedures. It would be useful for a media facility to plot its presence on this grid and then match the result to the presence of the facility as perceived by the users. A facility might think ofitself as being very student/staff oriented, yet it might be perceived as being too procedure oriented by its 'clients'. It is the role of management to take all this into consideration.

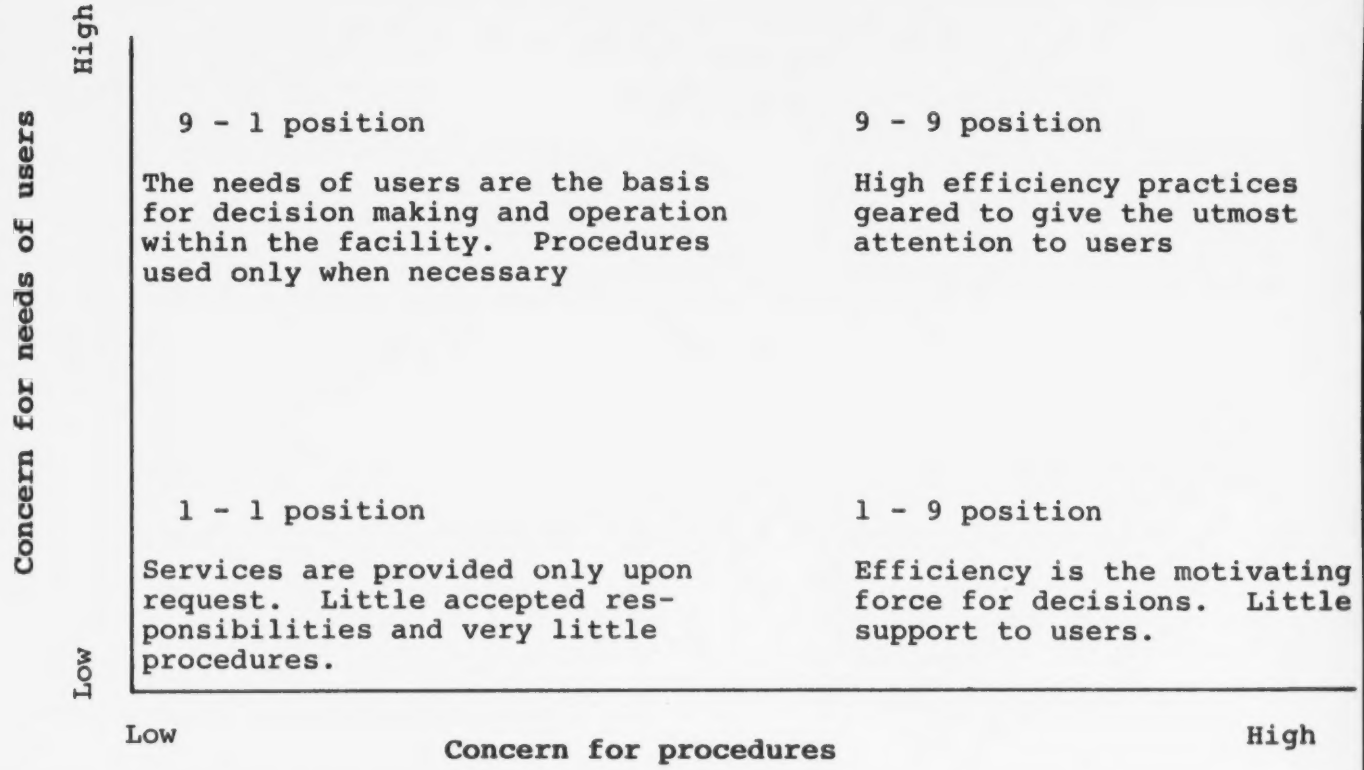
Concern for needs of users
High
Low
9 - 1 position
The needs of users are the basis for decision making and operation within the facility. Procedures used only when necessary
9 - 9 position
High efficiency practices geared to give the utmost attention to users
1 - 1 position
Services are provided only upon request. Little accepted responsibilities and very little procedures.
1 - 9 position
Efficiency is the motivating force for decisions. Little support to users.
Low
Concern for procedures
High

Figure 7. Efficiency and procedures in media facilities. (adapted from Miller T. E. (1974) The media-management grid --a tool for introspection in AECT (1975). Planning and operating media centers: Reading from Audiovisual Instruction -2. Washington, DC: Author p.44

Different media facility setting would have different measures to rate their success or achievment. A media facility functioning as an independent commercial enterprise would define success in terms of profits. A dedicated general service media facility would define its success by the number of users, or by learning effectiveness scales.

Management

William Schmidt (1980) attributes to management the role of "a constant balancing act with such variables as adequate staff, sufficient budget, desirable turnaround time, and fluctuations in service volume" (p. 23). I hold that there is more to management than this. Such a definition would suffice it the media facility were to be concerned only with equipment and circulation. However, if the facility is concerned with people and instructional service, then more emphasis needs to be placed on the training and in-service training of professionals. Management is also responsible for these elements. Management is also responsible to see how the service given could also become an instructional process. Thus, would it be better if a certain service is categorized with the do-it-yourself tasks, or should if fall under the do-it-for-them category? What difference would such a decision make to the learning experience of the individual?

Following Merrill and Drob (1976) I would summarize saying that management is responsible for the service within

the facility, the relationship to the parent institution, and to a symbol of leadership in the media field.

Since the 'clients' of the facility are mostly interested in the service, management must secure accountability within the work procedures. Guaranteed consistency in the products and services offered is another responsibility of management. Failure to provide such a guarantee will erode the credibility of any facility to an extent that it may, in time, become useless. Management will also have to establish accurate turnaround time for products and services. This helps management itself not to over commit the staff of the center. All the above can be achieved through the standardization of the operational procedures involved.

As part of its administrative functions, management has to keep a liason between the parent institution and the facility. This contact is vital for the livelihood of the facility to gain better access to resources. Alan Hancock (1977) suggests that the management of a facility should not be accountable to a department within the parent instituiton. Having a facility directly accountable to the administration of the parent institution improves the chances of effecting change within the educational system.

Furthermore, management should also be a source of leadership. Management should approach its internal situation through a methodical instructional approach. Management should also make it clear that it is oriented towards the improvement of teaching rather than the administration

of equipment and space. The center could take the initiative to look for the staff interested in improving the instructional methods and work with them to achieve their goals.

Different management roles can be outlined for the each level of objectives. This by no means implies that there is a different managerial strategy for each phase, but as one progresses through a continuum towards more sophisticated facilities different tasks have to be emphasized. Administration of resources and fund raising will always play a part in media management. But as one goes to higher level objectives managerial attenton shifts from a concern with equipment to facilitative techniques for better human interaction.

For first level services, the function of management is that of control and planning. Control is related to nonprint library procedures and storage. Planning is concerned with building a collection that would satisfy the need of users even in comming years. While striving to be always relevant, management should try to anticipate needs that the center will be facing.

In order to fulfill second level objectives, management will have to add more supervision to its roles. With regard to production, the media facility should try to help the users to help themselves. Of course this has to be a gradual process. Though the risk of equipment misuse is greater, so also is the return in economy and individual

expression. Care must be taken lest the 'help yourself' invitation might scare first-time users away from the facility. A delicate balance must be found between the goals of the center and the skills and motivation of the users.

Third level services demand a greater supervision by management. The users are more numerous. The equipment more complex and sophisticated. Management will have to ensure that the facility offers a good training ground and that technical personnel are readily available. At this level management could even take the initiative to encourage instructors to continually develop their skills in the media environment. Giving exposure to the instructors and staff will ultimately help the facility get better products and support.

When a media facility is involved into the delivery systems, management has the role of coordinating the needs and recources. Since delivery systems require great capital investment, greater utilization would make them more cost-effective. Planning on this level demands foresight in the technical and economic optimization for information transfer.

If instructional design is the main objective of the media facility, then the role of management is to provide advising for all who want to make use of such services. In higher education this service should not be restricted to staff, but can also be offered to those who are involved in educational or instructional projects.

Area of work		RESPONSIBILITY	ADMINISTRATION
AV SUPPORT (print predominant)	1	House and classify materials: slides, filmstrips, tapes for staff	-control: circulation storage -plan: collection building
	2	Produce and store media supports for instructors and staff	-control:circulation storage (hardware & software) -supervise production
MEDIA EXPRESSION	3	Provide experimental place for staff/students to create & get training in various media: TV, Radio, Photography, Slide-tape...	-control: circulation & storage -supervise & support production -provide training ground -plan center's technical update
CONTENT DELIVERY	4	Teaching and training delivered to classes and remote areas through different technologies: audio, video tapes, CCTV, microwave...	-control equipment -coordiante needs & resources -plan maximum use of delivery system
DESIGN	5	Media facility personnel are approached as experts to design courses for more efficient and effective transfer of information	-provide instructional advising -support experiments -plan personnel update
	6	Media facility personnel are approached as experts in systems design to contribute to an educational environment that facilitates training and education	-facilitate creative interaction -support experiments towards future models of education

Figure 8. Administrative functions of a media facility.

The role of media management in reaching sixth level objectives and goals, is facilitating meetings among expert personnel. This should provide the parent institution with alternative and futuristic models of educational contexts and processes. It would then be the task of the institution, using other services provided by the media facility, to accept the models offered, prioritize the needs and resources towards better education and evaluate the outcome.

Though the media facility is concerned with instruction, the media management is not responsible for academic administration and accreditation. These are still managed by the parent institution. It falls upon the institution to accept or reject the products offered or delivered by the media facility.

Centralization vs Decentralization

The question of centralization or decentralization is faced by several administrators of media facilities. Having a centralized facility will usually have the advantages of savings and coherent decisions in equipment collections. The decentralized systems allow more freedom to various individuals to create more utilization possibilities without having to undergo a lot of red tape.

Both Schmidt (1980) and Merrill and Drob (1976) tackle this subject quite well. While Schmidt tries to integrate the best of both, Merrill and Drob point to some more advantages of centralization. The value of cross-

fertilization of information and personnel is very high in the latter study. I agree with these conclusions especially if the media facility employs personnel who have a general background in a wide range of media possibilities.

I would even suggest that if the need arises for any department within the parent institution to buy media equipment, then the media facility should be consulted. Having incompatible media on the same campus might prove a very frustrating experience.

Moreover, if the media facility is a statement in teamwork, the layout of the facility and the equipment used ought to make this possible.

Standards and Controls

Standards are vital to any media facility. Like any other cybernatic system, there must be some form of direction and control so that the goals of the system might be achieved. With the media facility, these can be both external and internal.

External control over the facility can come from the parent institution in the form of required and specified objectives. Other forms of control can emerge from the medium being used. It is common knowledge that every medium has its own grammar. Added to this, every medium imposes some form of standard.

If the idea of doing work for clients outside the parent institution is accepted, then this can also become a self-imposed control. I personally suggest that each

facility would try to compete with other bidders for certain contract work outside its own immediate environment. Besides being a source of experience for interns, and a source of funds for the facility, such work could serve as a source of self-imposed evaluation. If a facility cannot win any bid outside its immediate environment, management would benefit from some soul searching and discover the reasons why. Management might discover a low level of production, unacceptable quality standards or loss of credibility as being the cause of this situation. In this way external users could be a source of standardization. However, a decision should be reached limiting this type of commitment to a predetermined percentage of working time or total output of the facility. The danger of accepting the paying users for their financial value, at the cost of non-paying user is obviously present, and has to be controlled.

The internal control within a facility could take form of a quality control on products and production. Every product bearing the logo of the center is a statement about the facility. There can also be evaluations to check how satisfied the users are with the products and services they receive.

As in any system, controls and standards cannot be present unless there is sufficient information to help the system keep right on target.

Within the media facility such information can be gathered in different ways. Custom designed service forms

can be one way of obtaining information. Needless to say, management has to decide what are the units of information that will count in gathering this data. Also a system for gathering the data has to be supported. Units of data might include (a) types of services needed, (b) clients served, (c) materials utilized, (d) units produced, (e) duration of task, and (f) instructional effectiveness.

When this data is tabulated it can point out the strong and weak points of a particular center. Data can provide help in describing a center, bringing out efficiency factors, and pointing out projections needed for further investment. One can also compare the results of this data to the objectives of the center. This could be a very eloquent feedback.

Other sources of information gathering could be the suggestions coming from the media personnel and users. Being experts in the field the staff can point to ways that would facilitate work. The users would point ways that could make services more related to their needs. Again, a system must be established for gathering this information, otherwise feedback would be based on feelings and hunches.

Other information could be gathered through observation by management itself. At times expert help could be called in to try to evaluate the center. Expert consultants could provide insight and new ideas toward more efficiency and economy.

Budgets

> Budgeting for non-print must take into account the higher per unit cost of most nonprint items and the investment for inspection and maintenance, and storage and display systems. No budget manual exists that provides answers for budget management of a non print collection. (Brong, 1976, cited in Information Futures, 1976, p. 23)

Budgets are ultimately a question of priorities. There is always less funds for, and within the facility, than the facility needs. And if the media facility decides to be a catalyst in instructional procedures within a parent institution that does not share the same views, further difficulties are bound to arise. Being a catalyst media facility implies seeing a future and working toward it before it become a pressing demand. Unless the parent institution shares similar futuristic outlooks, it would be very difficult for the media facility to justify the request for funds for something which is not a tangible need.

Having the best of equipment may not necessarily bring about innovation. Greg Kearsley (1984) defines innovation as:

Human abilities x Hard technology x Soft technology

The integration of the three elements is needed, and the three have to come for budget considerations. Which of these takes precedence is always the question. But no amount of hard technology on its own would bring about drastic change especially if the facility is to be characterized by its help in the instructional process.

Adequate budgeting for the continued education of the media personnel is very vital. Given that systematic instructional technology is still at its infancy, and the technology explosion, media personnel --including instructional designers-- need periodic in-service training. The first people who got involved with the media facilities had little preparation for the job, simply because preparation for these kinds of jobs did not exist (Merrill and Drob, 1976). Unless a media facility budgets for personnel training, then the facility might find itself employing people who have given up on creative thinking.

Another budget item is equipment. Even though equipment tends to change rapidly many facilities are stuck with the equipment they buy for a number of years. Thus before itemized budgeting is done, it is wise to have a master plan of intended objectives or directions for some years ahead. In this way, all items to be purchased would be considered as modules within this master plan. This kind of purchasing strategy can be a great money saver.

With good planning and foresight the media facility could make use of technology, especially the computer, to do away with such routine work as coordination, scheduling, inventory and other day to day activities. While such an investment would surely involve a considerable capital investment savings in administrative time could be devoted to help the facility provide better professional services.

Money should also be budgeted for a good exercise in public relations. The introduction of the media facilities is not a quantitative leap but a qualitative one. Many still need to be aware of this new process, many still need to be convinced. The media facility is working toward a change in methods of instruction. Not only does the facility need to be aware of what it is doing, but also of how it is perceived by its users. Professional public relations can help the media facility come closer to its users.

As in previous chapters, I will not go into the specific details of itemized budget and how it can be worked out. The reader is invited to look at the work of Jamison, Klees & Wells (1978) for a professional work in this area.

I will only suggest a way of thinking about a budget in relation to the definition of innovation given by Kearsley (1984). This kind of 'itemized' budget could be applied for any level of the media facility. If this type of budgeting could be projection for a number of years, then planning could become more clarified. (See Figure 9) The suggested model could be a starting point for a simple as well as a sophisticated budget proposal. Projections could be created by adding an equal percentage increase to every item. Yet the same suggested model could provide space for some creative thinking for alternative futures.

Finally I would like to point out a possible danger in calculating costings for in-house facilities. These centers make use of services and utilities provided by the

	Year.....	
	Day-to-day	Special
HUMAN ABILITIES		
Personnel *Management		
*Designers		
*Technicians		
*Support (clerical, cleaners...		
HARD TECHNOLOGY		
*Equipment		
*Equipment maintenance		
SOFT TECHNOLOGY		
*Equipment supplies		
*Research		
*Experimentation		
SUPPORT		
*Storage facilities		
*Building (utilities, furniture, maintenance...		
*Stationery		
TOTAL		

Figure 9. Suggested 'itemized' budget.

parent institution. To reflect proper costing of products and services within such a set-up, one must also take into account the hidden cost undertaken by the parent institution. Unless this is carefully taken into account, one will end up with misleading figures and inaccurate budgets.

The administrative implications of the model outlined in chapter two can be far reaching. A great number of variables are involved. It is clear that administration of media facilities in the 1980s requires an integration of strategy, skills and knowledge of educational theory.

CHAPTER V

LOOKING AT THE FUTURE

> If we are to hit the future head-on, and if we are honestly concerned and committed to the idea that these technological developments are essential to effective instruction, then we have to take an honest look at why the educational establishment has been reluctant to bring media into the educational system as a full partner. (De Bernardis, 1976, cited in Information Futures, 1976, p. 101)

Looking at the Present

The first good step towards a future would be to make a solid assessment of the present and its problems. Technology in education has often been perceived as an enemy because it would replace the need for teachers. The use of media has proven otherwise. But the effects of fear do linger on (De Bernardis, 1976, cited in Information Futures, 1976). Instructional technology and media facilities need to come together and clarify some misconceptions that have grown into the system.

Furthermore, new equipment is reaching the market place every day. Some, in order to go for the latest equipment, prefer not to go at all. The idea of waiting for tomorrow for better and cheaper equipment should be taken with some consideration. Let it not paralyze development.

The requirement for bells and whistles is another misconception. People have been more lured to buy equipment

because of its advertised capabilities, rather than because of its intended use. Emphasis must be placed on the selection of equipment based on needs assessments and help guide its effective use.

Improvement of our present situation is the first step towards a bright future. Unless media facilities and personnel can go into an exercise of self-criticism, then we are risking a status quo in a changing world. The media facilities would risk becoming irrelevant.

Seeing a Future

Predicting a future is always a risk. Many have predicted a future that proved them totally wrong. Even if the techniques of extrapolating from a given chart a number of predictions has become a scientific tool, still all depends on the data that is initially introduced. The assumption taken by Finn (1961, cited by McBeath, 1972) predicted an upswing for instructional media and nothing could stop this new movement. This was his outlook in the begining of the 1960s. Yet new economic circumstances and inherent discrepancies in his model proved him wrong in the 1980s. At the risk of misinterpreting the present, or being wrong about the future I will try to project a future for the media facilities.

The questions of the 1960s were dealing with the validity of introducing technology in the educational process. Many would concede that this question is now answered. We have sufficient results to show that media can be an

effective and efficient aid in transmitting information and teaching learning algorithms.

The questions of the 1990s will inquire how to increase this effectiveness towards more efficient transfer of information. The amount of knowledge and information is growing exponentially. How can the media facility help the learner to cope with the new situation? How can the media facility be less labor intensive? How can the media facility motivate more people to search for and access knowledge?

Future Objectives for the Media Facility

In the years ahead I expect a shift in the emphasis for media facility objectives. In the 1960s media facilities emphasized the first and second level of objectives. In the 1970s more resources were directed to level three objectives. In the coming years the focus of attention for the media centers will be objectives on levels four and five. In the meantime awareness of sixth level objectives will unfold and become an object of research and experimentation. Many of the basic functions of a media center are already available elsewhere at a minimal cost.

For the facilities that decide to put into effect first level objectives a modified definition of roles will be needed. But this applies also for other levels. It will still be possible for a facility to embrace the objectives at a certain level and refuse others. Directions of growth are still a matter of choice.

Economic measures will drive media facilities that serve as clearinghouses to pool resources at a district or regional level. More responsibility will be placed on the users to initiate their search for materials. The facility will be more involved in teaching the process of accessing information. Also the media facility will be teaching the new audio-visual alphabet, namely the new 'icons' that describe our mechanized processes. These new 'icons' are being introduced everywhere. They replace written information that is limited by linguistic differences. The new 'icon' for the baggage department in Tokyo Airport and Orly Airport in France are the same, thus enabling communication among more people. It will be the task of the future media facility at its basic level to introduce its users to this visual language.

At the second level of media facilities more production will be passed on to the 'do-it-yourself' category. Though machines increase their sophistication and capabilities they keep increasing their user-friendly characteristic. Many machines will also offer 'tutorial' help within the equipment itself. This may reach the user through electronic display boards or even through voice synthesizers. The computer will become indispensable for art work and graphic design.

In these last years audio and video production equipment increased in capabilities and decreased in size. The equipment consumes less power making production possible

in remote locations far away from any studios. This trend will continue to increase. Consequenlty I expect a change in the future media facilities devoted to production. Location work will be the dominant source of programing and the studio will serve primarily for continuation. This philosophy will become apparent in the type of equipment bought and the design of the facility itself.

More electronics will come into the production facilities. Digital audio will replace analog in less than ten years. Graphics will become an integral part of television production. Video editing facilities will improve and become cheaper.

The 1960s put on the facilities a demand for carrels with 'playback' equipment. The 1990s will put a similar demand for computer stations. The availability of computers for word processing and spreadsheet work will be a must. The computer will be to the 1990s what the pocket calculator was in the 1960s. This will bring about the need for coordination between the media facility and the computer department with education. Redefiniton of roles and division of labor will have to be reconsidered within the two subsystems of education.

The greatest change I anticipate will be in the delivery systems. Cheaper satellite communication and direct broadcast techniques will make it possible to extend the service of the media facility beyond campus. Delivery systems will be personalized in such a way that a person will

be able to access materials within the facility from home. At first this service will be limited to within a certain distance from the facility, but continued technical improvement in the use of the frequency spectrum will enhance these possibilities. In this way the media facility will be able to contribute more towards a concept of continued education.

These improvements in delivery systems will go beyond a redifinition of the present facility-user relationship. The center itself will get involved into a network with other centers and database resources. Technology has already made great communication possibilities available to us. But it also takes a change of attitude by traditional educational structures to accept new methods of instruction.

It is probable that the improvement and or introduction of new delivery systems will absorb the greatest part of media facility resources in the next decade.

Instructional design service and advising will continue to come to the forefront of media facilities. Present research in the use of technology for education, in educational and learning theories will continue to stimulate new insights in instructional technology.

While traditional instruction was largely focused on children, I expect that we shall be hearing more about adult instruction. Industry is putting great investment in this area of research. Its effects will reach the media facilities who will be faced with greater numbers of people re-entering the educational system.

Media facilities will take more responsibility for computer-aided-instruction. The focus of attention will constanstly keep aiming at more efficiency and effectiveness.

I see the emergency of the sixth level objectives towards the end of this century. In this movement I see a parallel situation in the medical field. Medical institutions were created to check diseases. Today these institutions have redifined their role within American Society: they are more concerned with the well being of the total person. In the same way, when these basic instructional difficulties are overcome, facilities will start thinking more of the total learning situation.

Personnel

Less personnel would be required tp supervize the equipment in a facility. In the 1960s personnel were needed to attend to the use of an audio tape recorder. In many instances the manipulation of the tool had to be taught by the media facility. Today many of these skills can be taken for granted even before student starts attending school. The same is happening with computers. With the widespread use of home computers, the media facilities will not have to introduce computers to children. Personnel will be needed to help children use the computer towards desired needs.

Personnel will have to shift from instruction about technology, to instruction about the application of technology. More instructional desigers will be required. The media personnel of the future will have to be classified in

two groups, namely the artists and the technicians. A person who wants to succeed in the field will have to integrate psychology, architecture, systems design capabilities and knowledge about technologies. All this must be incorporated with a thorough knowledge of aesthetics and human perception. And since all this would be too much to be handled by a single individual, the solution will always be teamwork.

It may be possible in the coming years for some institution to build up a curriculum training for media personnel. This will include a general knowledge of different media and their required environment. Another basic component of the curriculum will be systems integration. Having finished this, each media specialist will be free to tackle some specialization within the field. But there should be a common core of knowledge that will make it possible for media personnel to communicate among themselves and their environment. I would also suggest that such a curriculum should be based on group training techniques. Present educational formats are largely individualistic and help the learner remain an isolated person. The curriculum for media personnel will have to start from the premise that an effective outcome derives from peoples' interactions. This should be evident in the method and content of such curricula.

The Future Role of Media Facilities

The media facilities of the future will continue to get a more supplementary role. While the 1950s and 1960s

brought the television set, audio recorder and stereo in the majority of homes, 1980s are bringing the videotape recorder and the computer to every household. Consequently the media facility will be able to take such basic skills for granted.

It will be the task of the media facility to emphasize more process knowledge rather than object knowledge. The vision of William Paisley (1984) points to a different emphasis in the whole of education. He suggests the integration of learning and working experiences. The media center is most likely the place able to start working in this direction.

> The future environment will provide extraordinary access to information, but only to those who understand the algorithms of information seeking. They will provide extraordinary analytic power, but only to those who understand the algorithms of analysis. they will provide extraordinary control over self-generated information, but only to those who understand the algorithms of file management. They will provide extraordinary contact with others, but only to those who understand the algorithms of network communication. (Paisley, 1984, p.14)

This will be primarily the task of the future media facility and the personnel employed therein must be able to help bring about this objective. Only this can help our future students be able to manipulate the information overload rather than be victims to it.

Up to now the majority of writing on media facilities are the results of personal experiences striving to recount charted ways to survival. In the coming years literature on the subject will have to establish some basic standards. Some steps in this direction have already been made by

giving some standards related to space and staff. More needs to be done related to architectural design, personnel standards and objectives.

Further Studies

In a field still in its adolescence there is always room for research. The reality of the media center is still not totaly defined and attempts should be made to come up with alternative models explaining what is happening.

Areas of further study could be relating the effectiveness of such a model with different schools of learning leading to results about optimum effectiveness. Each learning theory builds a series of assumptions, and valuable knowledge can be gained if we know how a media facility can fit within each theory.

Other studies may want to take the different levels of media facilities described in this model and unfold even further implications in terms of resources, effectiveness, and needs.

Somebody might want to take up a study to establish correlations, if any, between media facility development and the personality of the director/s of such facilities. If correlations can be established, then we can start building up a formal inventory of skills for a media center director or manager.

As for myself I hope that this thesis provokes some dialogue towards more efficient learning facilities.

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APPENDIX A

The specifications that follow for space are on an enrollment of 1000 students or fewer, and will need to be increased proportionately in larger schools. (American Library Association, 1966).

Functions	Special aspects	Space in square feet
Entrance	Displays and exhibits, copying equipment, card catalogs, periodical indexes	800 - 1000
Circulation and distribution		
Reading and browsing Individual viewing and listening	No more than 100 students should be seated in one area	Space based on 15% of student enrollment at 40 sq. ft per student
Individual study and learning storytelling (elementary schools) Information services	30-40% of seating capacity for individual study areas, equipped with power and capability of electronic and response systems and television outlets; area should be ducted for power and coaxial distribution. Where carrels are used, suggested size is 36 in wide and 24 in deep, equipped with shelving and media facilities, including electrical power, television and response outlets Linear and other types of shelving for all types of materials.	The instructional program in some schools may require that 1/3 to 3/4 of the student population be accommodated in media center(s)

Functions	Special aspects	Space in square feet
Conference rooms	Movable walls to allow for combining areas Electrical and television outlets and acoustical treatment One room, acoustically treated, with typewriters for student use	3-6 rooms with 150 sq. ft each
Small group viewing and listening	In addition to space provided for conference rooms Electrical and television inputs and outlets, permanent wall screen, and acoustical treatment	200
Group projects and instruction in research	Flexible space, the equivalent of a classroom area, equipped for instructional purposes and needs	900-1000
Administration	Office space for 4 professional staff members Media program planning area	600-800
Workroom	The amount of space recommended will have to be increased if centralized cataloging and processing services are not available from a	300-400

Functions	Special aspects	Space in square feet
	system media center	
Maintenance and repair service	Major service to come from system center	120-200
Media production laboratory	Sinks, running water, electrical outlets	800-1000
Darkroom	Light-proof and equipped with light locks	150-200
Materials and equipment storage for production	Necessary temperature and humidity control	120
Stacks	Stacks for overflow books and audio-visual materials	400-800
Magazine storage	Space for back issues of magazines, readily accessible for use	250-400
Audiovisual equipment: distribution and storage	Decentralised storage in large schools	400-600
Center for professional materials for faculty	Designed as a teachers' conference room Adjacent to media production lab	600-800

Functions	Special aspects	Space in square feet
Optional space (determined by school program)		
Television studio	A soundproof studio with ceilings 15 ft high and doors 14 ft by 12 ft	40 ft by 40 ft studio with necessary control space
Storage	For television properties, visuals etc.	800-1000
Office with work space	Place back-to-back with television studio	1200
Radio	May be near television facilities	20 ft by 25 ft studio with necessary control space
Computerized learning laboratory	Facilities to have response capability	900-1000
Storage and control center for remote access		900-1000

APPENDIX B

EQUIPMENT

The items in the list that follows represent the additional equipment needed to meet the multimedia approach which good teaching and effective learning require from the school media program. Recommended quantities have been stated in two columns. The basic specifications indicate quantities needed for a functioning program, more traditional in nature. The advanced recommendations present quantities that will be needed in those schools with such instructional approaches as individualization of instruction and independent study. It is recognized that in certain types of innovative programs even the advanced level will need to be exceeded. (American Library Association, 1966, pp. 44-49.)

	Basic	Advanced
16mm sound projector	1 per 4 teaching stations plus 2 per media center	1 per 2 teaching stations plus 5 per media center
8mm projector (only equipment for which materials exist at the appropriate school level should be procured)	1 per 3 teaching stations plus 15 per media center	1 per teaching station plus 25 per media center
2x2 slide projector remotely controlled	1 per 5 teaching stations plus 1 per media center	1 per 3 teaching stations plus 5 per media center
Filmstrip or combination filmstrip-slide projector	1 per 3 teaching stations plus 1 per media center	1 per teaching station plus 4 per media center
Sound filmstrip projector	1 per 10 teaching stations plus 1 per media center	1 per 5 teaching stations plus 2 per media center

	Basic	Advanced
10 x 10 overhead projector	1 per teaching station plus 2 per media center	1 per teaching station plus 4 per media center
Opaque projector	1 per 25 teaching stations or 1 per floor in multi-floor buildings	1 per 15 teaching stations plus 2 per media center
Filmstrip	1 per teaching station plus the equivalent of 1 per 2 teaching stations in media in elementary schools and 1 per 3 teaching stations in media center in secondary schools	3 per teaching station plus the equivalent of 1 per teaching station in media center in elementary schools 3 per teaching station plus the equivalent of 1 per teaching station in media center in secondary schools
2 x 2 slide viewer	1 per 5 teaching stations plus 1 per media center	1 per teaching station plus 1 per media center
TV receiver (minimum 23 in screen)	1 per teaching station and 1 per media center where programs are available	1 per 24 viewers if programs are available in elementary schools 1 per 20 viewers in classroom, where programs are available in secondary schools 1 per media center in both elementary and secondary schools
Microprojector	1 per 20 teaching stations	1 per 2 grade levels in elementary schools 1 per department where applicable in secondary schools 1 per media center

	Basic	Advanced
Record player	1 per teaching station, K-3 1 per grade level, 4-6 1 per 15 teaching stations in junior high and secondary schools 3 per media center 1 set of earphones for each player	1 per teaching station K-6, plus 5 per media center 1 per 5 teaching stations plus 5 per media center in junior high and secondary schools 1 set of earphones for each player
Audio tape recorder	1 per 2 teaching stations in elementary schools plus 2 per media center 1 per 10 teaching stations in junior high and secondary schools plus 2 per media center 1 set of earphones for each recorder	1 per teaching station plus 10 per media center in elementary schools 1 per 5 teaching stations plus 10 per media center in secondary schools 1 set of earphones for each recorder
Listening station	A portable listening station with 6-10 sets of earphones at the ratio of 1 per 3 teaching stations	1 set of 6-10 earphones and listening equipment for each teaching station and media center
Projection cart	1 per portable piece of equipment, purchased at the time equipment is obtained	
Projection screen	1 permanently mounted screen per classroom plus additional screens of suitable size as needed for individual and small group use. The permanent screen should be no smaller than 70 x 70 with keystone eliminator	

	Basic	Advanced
Closed-circuit television	All new construction should include provisions for installation at each teaching station and media center. Older buildings should be wired for closed-circuit television with initiation of such programs	
Radio receiver (AM-FM)	1 per media center plus central distribution system (AM-FM)	3 per media center plus central distribution system (AM-FM)
Copying machine	1 per 30 teaching stations plus 1 per media center	1 per 20 teaching stations plus 1 per media center
Duplicating machine	1 per 30 teaching stations plus 1 per media center	1 per 20 teaching stations plus 1 per media center
Micro-reader (some with microfiche attachment)	Equivalent of 1 per 10 teaching stations to be located in the media center	Equivalent of 1 per 5 teaching stations to be located in the media center
Micro-reader printer	1 per media center	3 per media center
Portable video tape recorder system (including cameras)	1 per 15 teaching stations with a minimum of 2 recorders per building	1 per 5 teaching stations with a minimum of 2 recorders per building
Light control	Adequate light control in every classroom and media center to the extent that all types of projected media can be utilized effectively	

	Basic	Advanced
Local production equipment		Per building: Dry mount press and tacking iron Paper cutters Two types of transparency production equipment 16mm camera 8mm camera Rapid process camera Equipment for darkroom Spirit duplicator Primary typewriter Copy camera and stand Light box 35mm still camera Film rewind Film splicer (8mm and 16mm) Tape splicer Slide reproducer Mechanical lettering devices Portable chalkboard
Items for special consideration		Large group instruction The following equipment should be available for each large group instructional area: 10 x 10 overhead projector, auditorium type; large screen with keystone eliminator; 16mm projector, auditorium type (consideration should be given to the possible use of rear screen projection) Television A complete distribution system of at least six channels should be available in a building so that: broadcast TV 2500MHZ, UHF, or VHF can be received; signals can be distributed to each room from the central TV reception area and/or from a central studio; signals can be fed into the system from any classroom; signals are available simultaneously

3¼ x 4 projectors
If still used by teachers at the school building, there should be 1 per school building plus 1 auditorium type per each large group instructional area.

Equipment to make tele-lecture available